

REMARKS:

Claims 14-17 are in the case and presented for consideration.

Newly presented claim 14 includes the combined features of claims 1 and 2, and for the reasons set forth later in these remarks, is believed to be novel and unobvious over the prior art in general and the Pierick et al. reference in particular.

Claims 15-17 replace respective and cancelled claims 3-5 with changes made to new claims 16 (old claim 4) to address the examiner's rejection of claim 4 as being indefinite.

Turning to the Office action, the examiner has rejected claim 4 for being indefinite for calling for "the usual maximum speed in the injection operation."

New claim 16 now defines the reduction in the speed of the screw to be less than 1/10 of a maximum speed in the injection operation. A skilled artisan in this field would be able to determine the maximum speed during the injection operation which obviously would be the fastest speed and then practice the invention according to old claim 4 and new claim 16 by reducing the speed of the screw to less than 1/10 of that maximum speed.

By this amendment thus the application and claims are believed to be in proper form under 35 U.S.C.

The examiner has also rejected claim 2 as being obvious from a combination of the Pierick et al reference (published application WO 98/31521) in view of U.S. Patent 6,328,916 to Nishikawa et al. The applicant however does not agree that this combination of references would render newly presented claim 14 obvious to those having ordinary skills in the art after a fair and complete consideration of the two references and any possible combination thereof which would be obvious.

The examiner correctly points out that at page 3 of the Pierick et al reference, lines

5-10, a single phase polymer plus propellant (blowing agent) combination is in the molding chamber and that a mechanical shut-off valve 64 described at page 19 starting at line 1, is disclosed in this reference. What is not taught, discussed or even remotely suggested in Pierick, is what to do with a mixture of polymer and propellant when a sudden stop of the “normal injection molding process” occurs. Nowhere thus in the primary reference to Pierick is the problem posed by the present application discussed, nor is any solution suggestion, despite the fact that the Pierick reference is quite lengthy and detailed in the technology it does disclose.

Looking at the beginning of page 19 of Pierick, here the shut-off valve 64 is closed after the injection is terminated, which is just one step of the normal injection process. In Nishikawa, it is only disclosed that back pressure is necessary to keep a minimum pressure for preventing the molten thermoplastic resin composition from separation into the blowing agent and the thermoplastic resin when the molten mass flows into the injector 29. This is again just one step of the normal injection process.

Both teachings have nothing in common with the situation when a sudden and unexpected stop of the injection moulding process takes place before injection has taken place.

the opening of a guard device of the injection moulding machine as called for in claim 14 is not part of the normal injection cycle, but an interruption of the normal process. As set out in the originally filed specification, it was for safety reasons that hitherto, the usual practice was that when opening a guard device to shut off the feed flow of pressure fluid to the injection cylinder, the mass pressure in the plasticizing cylinder fell below that limit value from which a single-phase solution breaks down, and the mass became unusable.

There is no teaching neither in Pierick nor Nishikawa of what to do when the injection process has to be interrupted for security purposes. The person of ordinary skill is not taught that it is possible to keep the mass to be injected usable by interrupting the connection between the plasticizing cylinder and the mould and by limiting the maximum speed of displacement of the screw arranged in the plasticizing cylinder in a way that the force acting on the screw is reduced to such a degree that the pressure level in the plasticizing cylinder is just sufficient to keep the single phase solution of polymer and propellant gas prepared therein in the single phase condition as in claim 14. So why should anybody skilled in the art change the normal procedure known to be important for security purposes when reading and combining the references?

The answer is that it would not be obvious for the skilled artisan to reach claim 14 from any combination of Pierick and Nishikawa since neither reference discloses the process of the present invention nor, just as importantly, any reason for practicing that process.

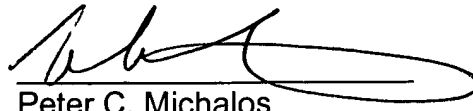
Claims 15, 16 and 17 distinguish the invention even further from the prior art and are believed likewise to be in condition for allowance.

The examiner has respectfully invited and urged to telephone the undersigned if any matters remain which can be treated by telephone interview in the interest of reaching an conclusion for the prosecution of this case.

The applicant sincerely believe that the claims define a patentable invention from the prior art taken separately or in any combination and that favorable action is both appropriate and warranted.

By this amendment thus the application and claims are believed to be in condition for allowance, and favorable action is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Peter C. Michalos', with a large, sweeping loop at the end.

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